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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ERNST-MICHAEL HAMANN, KLEMENS KLAFFKE, and
ROBERT SULZMANN

Appeal 2007-4051
Application 10/016,907
Technology Center 3600

Decided: January 30, 2008

Before MURRIEL E. CRAWFORD, HUBERT C. LORIN, and
MICHAEL W. O'NEILL, *Administrative Patent Judges*.

O'NEILL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Hamann, et al. (Appellants) seek our review under 35 U.S.C. § 134 of the final rejection of claims 1-12. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We AFFIRM.¹

THE INVENTION

The Appellants' invention is to a system for duplicating data stored on a physical smart card. The data is stored on what has been identified as a virtual smart card. The system provides a virtual smart card control program for creating the virtual smart card. (Specification 8:15-16.) A smart card manager is presented to the user as a graphical user interface in order for the user to administer the content of both the physical smart card and virtual smart card. (Specification 9:15-17.) Communication between the physical smart card and the virtual smart card is provided by a smart card application program interface (API) and a smart card reader. (Specification 9:11-14 and 10:1-2.)

Claims 1 and 2, reproduced below, is representative of the subject matter on appeal.

1. System for back-up of data objects stored on a real smart card comprising:

a virtual smart card control component for handling creating of a virtual smart card and for providing the security and the read/write process for the virtual smart card;

a smart card manager component for providing a menu controlled graphical user interface allowing user actions

¹ Our decision will make reference to Appellants' Appeal Brief ("App. Br.," filed May 9, 2006), the Examiner's Answer ("Answer," mailed Jul. 31, 2006), and the Final Rejection ("Final Rejection," mailed Nov. 17, 2004).

for initiating creation of a VSC and back-up of data objects being stored in said real smart into said corresponding area of said virtual smart card; and

a communication component for transferring said data objects to be backed-up from said real smart card to said virtual smart card by using functionality of said virtual smart card control component.

2. System for secure copy of data objects being stored in a virtual smart card into a real smart card comprising:

a storage media for providing a virtual smart card having data objects to be securely copied into the assigned area of a real smart card;

a virtual smart card control component for handling creating of a virtual smart card and for providing the security and the read/write process for the virtual smart card (VSC);

a communication component for providing access to a real smart card via access to a smart card driver assigned to the smart card reader and a card agent for providing smart card specific commands for writing said data objects to be securely copied from an intermediate buffer of said virtual smart card into said assigned area of said real smart card; and

a smart card manager component providing a menu controlled graphical user interface allowing to initiate user actions for creation of a VSC and secure copy of data objects being stored in said virtual smart card into said corresponding area of said real smart card.

THE PRIOR ART

The Examiner relies upon the following as evidence of unpatentability:

Mooney	US 6,351,813 B1	Feb. 26, 2002
Benson	EP 0 936 530 A1	Aug. 18, 1999

THE REJECTION

The following rejection is before us for review:

Claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Benson in view of Mooney.

ISSUE

The issue is whether the Appellants have shown that the Examiner erred in rejecting claims 1-12 as unpatentable over Benson and Mooney.²

FINDINGS OF FACT

We find that the following enumerated findings of fact are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

The scope and content of the prior art

1. Benson has a virtual smart card that emulates a physical smart card by providing identical interfaces and services. (Benson, Abstract.)

² Only those arguments actually made by Appellants have been considered in this decision. Arguments that Appellants could have made but chose not to make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2007).

2. Services include transferring data the virtual smart card calculated from the virtual smart card to the virtual smart card server. (Benson, col. 17, ll. 50-58.) Additionally, services include transferring data from the virtual smart card server to the virtual smart card. (Benson, col. 13, ll. 31-34.)
3. A server is a computer with memory that contains data and/or program files and transfers a copy of a file to another client computer.
4. A physical smart is an integrated circuit that has built-in logic or firmware that provides a kind of independent decision-making ability and a memory. Hence, a physical smart card is a limited computer with memory. As such, the physical smart card can store and transfer data similar to a server, just on a smaller scale. Thus, the difference between a server, client computer, and a smart card is a matter of scale in processing power and memory capacity.
5. The data transferred is protected data. Protected data can be a private key used for digital signatures, decryption, encryption key management, counters in software rental applications, licensing and copy protection (LCP) for executing software applications, network authentication, and confidential healthcare information. (Benson, col. 6, ll. 50-55 and col. 15, ll. 5-58.)
6. The virtual smart card stores the protected data in the volatile memory of the computer where it is being executed and inserts zeros into that memory upon exit. (Benson, col. 7, ll. 33-38.) The insertion of zeros in the memory overwrites the previous contents in said memory. As

such, the sensitive data that was in the memory prior to writing the zeros is inaccessible by the next use of the volatile memory.

7. The virtual smart card locks the volatile memory to prevent the contents in this memory from being transferred to a disk media through a virtual memory scheme that has multiple executing software applications sharing the volatile memory. (Benson, col. 7, ll. 42-45.)
8. Like a physical smart card, the virtual smart card has three states: idle, in-use, and destroyed. (Benson, col. 3, ll. 29-31.)
9. Benson discloses when a virtual smart card is created it is in an idle state. (Benson, col. 17, ll. 13-14.)
10. Mooney is a system for controlled access to data by use of physical smart cards. (Mooney, col. 1, ll. 58-67.)
11. Mooney uses a smart card reader that reads the access information after the user enters the correct set of passwords. (Mooney, col. 3, ll. 52-54 and col. 4, ll. 1-5.)
12. Mooney uses a series of graphic user interface windows to assist the user to create keys stored on the smart card for later access. (Mooney, col. 5, ll. 9-47, col. 7, ll. 47-48, col. 8, ll. 48-50, and Figures 4-6.)
13. Mooney uses a window (GUI) interface starting with a main window display having buttons, edit windows, check boxes, and scroll bars to provide access to the physical smart card. (Mooney, col. 11, ll. 42-63 and col. 12, ll. 17-22.) GUI stands for graphic user interface.

14. Smart card access provides a means for providing a back-up of data on the physical smart card onto a disk media in a secure manner. (Mooney, col. 13, ll. 12-20.)

The level of skill in the art

15. Neither the Examiner nor Appellants has addressed the level of ordinary skill in the pertinent arts of computer security. As such, we will therefore consider the cited prior art as representative of the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d. 1350, 1355 (Fed. Cir. 2001) (“[T]he absence of specific findings on the level of skill in the art does not give rise to reversible error ‘where the prior art itself reflects an appropriate level and a need for testimony is not shown.’”) (Quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)).

Secondary considerations

16. There is no evidence on record of secondary considerations of non-obviousness for our consideration.

PRINCIPLES OF LAW

Claims define the subject matter Appellants regard to be their invention. *In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971). In addition, claims are given the broadest reasonable construction consistent with the specification. *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). The Appellants have the burden to precisely define the invention, not the PTO. *Id.* at 1056. Appellants always have the opportunity to amend the claims during prosecution; a broad interpretation by the Examiner reduces the

possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05 (CCPA 1969).

Words in claims “are generally given their ordinary and customary meaning” to a person of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996) *see also Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). How a person of ordinary skill in the art understands a claim term “is based on the well-settled understanding that inventors are typically persons skilled in the field of invention and that patents are addressed to and intended to be read by others of skill in the pertinent art.” *Id.* at 1313. When interpreting a claim, unless the inventor has set forth a definition for a term that term will be given its ordinary and customary meaning as understood by one skilled in the pertinent art. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, (1966). *See also KSR*, 127 S.Ct. at 1734 (“While the sequence of these

questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

“In *KSR*, the Supreme Court emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art,” 127 S.Ct. at 1739, and discussed circumstances in which a patent might be determined to be obvious without an explicit application of the teaching, suggestion, motivation test.

In particular, the Supreme Court emphasized that “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss*, 11 How. 248.” *KSR*, 127 S.Ct. at 1739 (citing *Graham*, 383 U.S. at 12 (emphasis added)), and reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* The Court explained:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at 1740. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.*

In rejecting claims under 35 U.S.C. § 103(a), the Examiner bears the initial burden of establishing a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). *See also In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). It is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). In addition to these factual determinations, the Examiner needs to articulate an apparent reason to combine the known elements in the fashion claimed. *See KSR*, 127 S.Ct at 1740-41. If the Examiner has met the initial burden, the burden of coming forward with evidence or argument shifts to the Appellant. *Oetiker*, 977 F.2d at 1445. However, the Appellant's arguments in the Brief cannot take the place of evidence. *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974). *See also In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984).

ANALYSIS

The Appellants argue claims 1 and 2 as a group (App. Br. 6-10)³. As such, we select claim 2 as the representative claim,⁴ and claims 1 and 3-12 stand or fall with claim 2. 37 C.F.R. § 41.37(c)(1)(vii) (2007).

The Appellants summarize that the Examiner has failed to establish their view of the criteria needed for a prima facie case of obviousness: (1) suggestion or motivation in the references themselves or knowledge in the

³ Claims 3-12 appear not to be argued.

⁴ Claim 2 is more comprehensive than claim 1. If the Appellants fail to show the Examiner erred in rejecting claim 2, then the Appellants would likewise fail to show the Examiner erred in rejecting claim 1.

art, (2) reasonable expectation of success, and (3) the references must teach all of the claim limitations. (App. Br. 6.)

Appellants' suggestion/motivation contention

The Supreme Court rejected the rigid approach of the Court of Appeals for the Federal Circuit with respect to its application of its “teaching, suggestion, or motivation” test (TSM test), *KSR*, 127 S.Ct. at 1739. Instead, the Examiner needs to articulate an apparent reason to combine the known elements in the fashion claimed. *Id.* at 1740-41.

The Examiner reasoned that one skilled in the art would apply the teachings of Mooney to duplicate smart card data using a graphic user interface to the Benson system in order to protect the smart card owner and issuer from unauthorized use of lost or stolen smart cards. (Answer 4-5; Final Rejection 5-6.) We find that the Examiner’s articulation of an apparent reason one having ordinary skill in the art would have combined the teachings of the prior art in the manner claimed is reasonable, and the Appellant has not persuaded us of any error in the Examiner’s reasoning. *See KSR*, 127 S.Ct. at 1740-41.

(Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.)

Reasonable expectation of success contention

The Brief fails to elaborate the reasonable expectation of success contention mentioned in the Appellants' summary on page 6 enumerating their three criteria for establishing a *prima facie* case of obviousness. Appellant's arguments in a brief cannot take the place of evidence. *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974). *See also In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984).

References must teach all limitations contention

The Appellants contend Benson lacks disclosing how to create a virtual smart card. (App. Br. 7.) The Examiner responded that how to create a virtual smart card is not claimed. (Answer 11.) The Examiner's response appears correct. Furthermore, we see little if any difference between the smart card as a result of the claimed "creating" and that which Benson discloses. The Specification does little more than provide an overview of a creation step for a virtual smart card without providing any details of how the virtual smart is created. The disclosure of this feature is limited to a brief passage of a program as described in Figure 1. (Specification 8:5-6.) No technical details are given to the program for creation of the virtual smart card. Accordingly, one of ordinary skill reading the claim would construe the claim as requiring no more than that the virtual smart card is one that is created. In that regard, Benson does disclose a virtual smart card is created. (Finding of Fact 9.)

The Appellants contend neither Benson nor Mooney teach a menu controlled graphical user interface for initiating the creation of virtual smart card and duplicating the data between a physical smart card and the virtual

smart card. (App. Br. 8.) The Examiner responded by arguing that those skilled in the art would understand that Benson's emulator, resource manager and virtual smart card creates, controls, and manages the virtual smart card disclosed in Benson. The Examiner also relied on Mooney's graphical user interface and the process of backing-up data from a smart card (a type of computer (*see* Finding of Fact 4)) to a computer. (Answer 12.) As the Supreme Court made clear “[f]ollowing the principles [in the Court's precedent of a function approach] may be more difficult in other cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement.” *KSR*, 127 S.Ct. at 1740. The Court explained,

[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

Id. at 1740-41. The Court noted that “[t]o facilitate review, this analysis should be made explicit.” *Id.* (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). The Examiner appears to have done this. (Answer 4-5.) The Examiner's assessment of the scope and content of the cited references is reasonable. Benson discloses the creation of a virtual smart card. (Finding of Fact 9.) Mooney does teach a graphical user interface and process for duplicating smart card data. (Finding of Facts 12-14.) Applying the *KSR*'s

functional approach, the combination of Benson and Mooney yields a predictable result of using a graphic user interface to assist in the creation of virtual smart cards and the duplication of data from a virtual smart card to a physical storage media whether on a hard disk of a computer or an integrated circuit within a physical smart card. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 1739. In that regard, there is no evidence of secondary considerations. (Finding of Fact 16.)

The Appellants also argue that neither Benson nor Mooney teach transferring data to be backed-up from a physical smart card to a virtual smart card. (App. Br. 9.) We are not persuaded by the argument. The Examiner acknowledges that Benson does not disclose this *per se*, but argues that those skilled in the art would understand that a virtual smart card is a duplication of a physical smart card, relying on Benson’s teaching of the existence of a virtual smart card and Mooney’s teaching of backing-up data from a smart card to another storage media (the hard disk in the computer). (Answer 12.) We agree. Mooney does teach the backing-up of data from a smart card to another storage media. (Finding of Fact 14.) Benson does teach the virtual smart card emulates the properties of physical smart card. (Finding of Facts 1 and 8.) Given this, it would have been obvious to one of ordinary skill in the art reading the references as a whole to provide a means for transferring data to be backed-up from the physical smart card to the virtual smart card.

The Appellants contend neither Benson nor Mooney teach writing data to an intermediate buffer in the virtual smart card to an assigned area of the real smart card. (App. Br. 10.) The Examiner stated that, because a

virtual smart card and a physical smart card have been established as equivalent in the prior art, the process of writing data is therefore disclosed. (Answer 13.) We agree. Benson describes the virtual smart card emulates the physical smart card. The emulation is done by providing identical interfaces and services. (Finding of Fact 1.) Interfaces and services include: (1) transferring calculated data from the virtual smart card to another memory device (Finding of Fact 2) and (2) the other memory device transferring protected data to the virtual smart card (Finding of Fact 2) wherein the protected data can be a private key for digital signatures, decryption, cryptographic key management, licensing and copy protection (LCP) for executing software applications, and even confidential healthcare information (Finding of Fact 5). The virtual smart card stores its protected data in the volatile memory of the machine where it is being executed. (Finding of Fact 6.) Moreover, the virtual smart card locks this memory in the machine to preclude this memory from being shared by another executing software application. (Finding of Fact 7.) Thus, Benson discloses a memory, writing data into the memory (the transfer to memory), and transferring data out of that memory to another memory. As such, writing to memory is disclosed in Benson as the Examiner had found. An obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 127 S.Ct. at 1741. That is, “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” *Id.* at 1742. We find the Examiner did not err in reaching the conclusion that Benson suggests a system whereby data is written.

We have carefully reviewed the Appellants' arguments but for the foregoing reasons do not find them persuasive as to error in the rejection. We also observe, as the Examiner has, that the Brief attacks the references individually. It is important to point out that the test of obviousness is what the combined teachings of the references would suggest to those of ordinary skill in the art. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Whether or not an individual reference teaches a specific feature of the claimed invention is not dispositive of the question of obviousness. Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *Keller*, 642 F.2d at 425.

CONCLUSIONS OF LAW

We conclude the Appellants have not shown that the Examiner erred in rejecting claims 1-12 as unpatentable over Benson and Mooney.

DECISION

The decision of the Examiner to reject claims 1-12 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

Appeal 2007-4051
Application 10/016,907

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